RESEARCH ARTICLE

INDONESIAN JOURNAL OF CANCER

The Impact of COVID-19 Pandemic on Ocular Oncology Services at Cipto Mangunkusumo Hospital, Indonesia

Neni Anggraini*, Hanifah Rahmani Nursanti, Mutmainah Mahyuddin

Department of Ophthalmology, Faculty of Medicine, Universitas Indonesia - Cipto Mangunkusumo Hospital, Jakarta, Indonesia

ARTICLE INFO

Received : 25 January 2023
Reviewed : 23 February 2023
Accepted : 27 March 2023

Keywords:
COVID-19 pandemic, ocular oncology service, social restriction, waiting time

**Corresponding author:*
Neni Anggraini
Department of Ophthalmology, Faculty of Medicine, Universitas Indonesia - Cipto Mangunkusumo Hospital, Jakarta, Indonesia
neniangga@gmail.com

ABSTRACT

Background: Delay of diagnosis and treatment in ocular oncology services due to the COVID-19 pandemic is very disadvantageous. This study aimed to evaluate the impact of COVID-19 on new patients with suspected eye tumors in terms of volume, characteristics, and waiting time for a procedure.

Methods: A retrospective study based on hospital records of new patients was held in the ocular oncology clinic of Cipto Mangunkusumo Hospital, a tertiary eye care center in Jakarta, Indonesia. Patients were analyzed descriptively based on three time periods: pre-COVID-19, COVID-19 social restriction, and post-COVID-19 social restriction. Each patient was stratified according to case priority during the COVID-19 pandemic suggested by Indonesia's Ophthalmologist Association (IOA).

Results: During the COVID-19 social restriction between March to June 2020, new patient volume decreased by 73.1%, with a 75.5% decline in referrals from the governmental hospital. Elderly, pediatric, and highly educated patients were less likely to visit the clinic. Patients with acute onset, invasive or metastatic tumors, and advanced T-stage were more likely to be referred to the hospital. Third-priority cases referred with a lower ratio during COVID-19 social restriction (29% vs 44.9% in pre-COVID-19 and 35.1% in post-COVID-19 social restriction) and had to wait longer for the procedure (41 (18–60) days vs 28.5 (11–63) days in pre-COVID-19 and 16.5 (7–67) days in post-COVID-19 social restriction).

Conclusions: As the healthcare service was overwhelmed by COVID-19 patients, referral to ocular oncology services was severely disrupted, particularly in elderly, pediatric, and early T-stage patients. Strategies are needed to ensure that highly prioritized cases may access the services.

INTRODUCTION

World Health Organization (WHO) declared the SARS-CoV-2 Disease-2019 (COVID-19) as a global pandemic on March 11th, 2020, three months after the first reported case in Wuhan [1]. COVID-19 is a disease caused by the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2). Fever, shortness of breath, and radiological findings of ground-glass opacity on both sides of the lung fields characterized the disease [2]. With the virus transmission that can occur through direct and indirect contact, COVID-19 disease spreads to various places quickly [3]. Every country, including Indonesia, has a role in controlling the spread of COVID-19 infection by making restrictions and pandemic regulations.

Indonesia announced the first case of COVID-19 on March 2nd, 2020. Furthermore, the government issued a social restrictions policy, which limits people's outside activities [4]. Interregional mobilization was limited, including referrals of patients to higher health facilities. In response to the increasing cases, health facilities adopted several adjustments to provide safe health services for patients and health workers [3,4]. Various manifestations of COVID-19 allow sufferers to see a doctor with any skill. Eye complaints such as conjunctivitis are found in COVID-19 patients [5,6]. The proximity of doctor-patient activity during general eye examinations increases the risk of virus transmission [7,8].

Indonesia's Ophthalmologist Association (IOA) published recommendations for eye care during the COVID-19 pandemic and the new normal era. The recommendation includes pre-arrival screening, patient triage, locomotion regulation for cross-infection prevention, minimum doctor-patient contact, case prioritization, and individual efforts to work safely [9].

Several ocular oncology cases cannot be considered elective. Life-threatening malignant tumors and some sight-threatening benign tumors needed early recognition [7,10]. Diagnostic and therapeutic plans for the tumor should be delivered despite the high number of COVID-19 cases present [11,12]. A delay in diagnosis may lead to increased advanced cases and future cancer mortality [13,14]. Cases whose treatment could still be postponed or would not develop resulting in deterioration or unfavorable conditions were included in the last priority of service [7,10,11].

Achieving a balance between efforts to prevent the transmission of COVID-19 and providing optimal service was not easy. This study aimed to evaluate the impact of the COVID-19 pandemic and national social restriction policies on the service for new suspected eye tumor patients in the ocular oncology clinic of Cipto Mangunkusumo Hospital.

METHODS

This retrospective study was based on the medical record of new patients with suspected eye tumors who visited the ocular oncology clinic at Cipto Mangunkusumo Hospital, a tertiary eye care center, between March 27th–June 18th in 2019 (pre-COVID-19), March 27th–June 18th in 2020 (COVID-19 social restriction), as well as three months period between June 19th–September 10th in 2020 (post-COVID-19 social restriction). An institutional review board approval was obtained, and the research adhered to the tenets of the Declaration of Helsinki. Demographic data, as well as the timing of radiological imaging and surgical procedures, were collected. Clinical characteristics were also collected, including tumor size classification according to the 8th AJCC staging system. Patients with incomplete medical records were excluded.

The cases were stratified into three prioritization groups based on recommendations by Indonesia's Ophthalmology Association (IOA), adapted from the Asia-Pacific Academy of Ophthalmology (APAO) guidelines [15]. First-priority cases are patients who require surgery within 24–72 hours to save lives. These included incision or excision biopsy in suspected malignant tumor cases, orbital exenteration in malignant or infection cases accompanied by a life-threatening condition, orbital tumor biopsy in suspected malignancy or vision/life-threatening cases, evisceration in severe intraocular infection cases, and enucleation in intraocular malignancy cases. Second-priority cases are patients who require elective surgery within four weeks to save lives or prevent further disease progression. These included orbitotomy in either benign or malignant vision-threatening tumors, nonspecific orbital inflammation (NSOI) with a vision-threatening condition, and carotid-cavernous fistula. In contrast, third-priority cases are patients who require elective surgery, which can be postponed for 10–12 weeks without causing unfavorable outcomes. Among these were excisional biopsy in suspected benign tumors and orbitotomy in cases of benign tumors that were not visually threatening.

Data were analyzed using SPSS (IBM SPSS Statistics 25, SPSS Inc., Chicago, Illinois, USA). Categorical variables were presented in proportions (%). Continuous variables were presented as median (minimum-maximum) due to non-normally distributed data.

RESULTS

A total of 223 patients with suspected eye tumors from all periods were included in the study. During the COVID-19 social restriction, 31 new patients were registered compared to 118 new patients in the corresponding 12-week period in 2019. The decline equaled a 73.1% drop, with a 75.5% decline in referrals from the governmental hospital. Patients aged 18–59 dominated ocular oncology clinic visits (80.6%). A decreasing proportion of pediatric and elderly patients was observed compared to the pre-pandemic period. Their visits rebounded in the post-COVID-19 social restriction period. The same trend was observed in patients with high education levels and those from outside Greater Jakarta **(Table 1).**

Proptosis and palpable mass were the major chief complaints of new patients in all three periods, while the proportion of patients complaining of blurred vision raised in the COVID-19 social restriction period (19.4% vs 11% in pre-COVID-19 and 8.1% in post-COVID-19 social restriction). In the pre-pandemic period, one patient without an eye complaint consulted from the Ear, Nose, and Throat (ENT) Department with juvenile nasopharyngeal angiofibroma. A higher ratio of acute onset patients was observed during the COVID-19 social restriction (12.9% vs 6.8% in pre-COVID-19 and 8.1% in post-COVID-19 social restriction). During the COVID-19 social restriction, cases were dominated by the invasive or metastatic tumor group (35.5%) and an equal proportion of orbital and benign adnexal tumors (25.8%). Third-priority cases dropped to 29%, then rebounded to 35.1% post-COVID-19 social restriction **(Table 2).**

The number of confirmed malignant cases during the COVID-19 social restriction decreased by 74.3% and had not fully recovered in the post-social restriction n period. Ocular adnexal lymphoma dominated the histopathological results of malignant cases in pre-COVID-19 and post-COVID-19 social restriction periods by 25% and 24.2%, respectively. However, only one lymphoma patient (8.3%) was discovered during the social restriction. Cases with tumor size less than T3 were lower during the COVID-19 social restriction (28.6%) compared to the post-social restriction period, which increased to 40% **(Table 3).**

P-ISSN: 1978-3744 E-ISSN: 2355-6811

Table 1. Patient demographics across all study periods

Characteristics, n (%)	Pre-COVID-19 Pandemic (n = 118)	COVID-19 Pandemic	
		Social restriction (n = 31)	Post-social restriction (n = 74)
Age			
< 18 years old	17 (14.4)	2 (6.5)	7 (9.5)
18–59 years old	80 (67.8)	25 (80.6)	54 (73)
≥ 60 years old	21 (17.8)	4 (12.9)	13 (17.6)
Gender			
Male	46 (39)	9 (29)	35 (47.3)
Female	72 (61)	22 (71)	39 (52.7)
Education level (*n* = 197)			
Low	35 (34.7)	9 (31)	18 (26.9)
Intermediate	47 (46.5)	17 (58.6)	36 (53.7)
High	19 (18.8)	3 (10.3)	13 (19.4)
Occupation status (*n* = 197)			
Working	37 (36.6)	8 (27.6)	29 (43.3)
Unemployed	64 (63.4)	21 (72.4)	38 (56.7)
Residence area			
Greater Jakarta	94 (79.7)	28 (90.3)	57 (77)
Outside Greater Jakarta	24 (20.3)	3 (9.7)	17 (23)
Referral			
Governmental hospital	40 (39.2)	9 (29)	25 (33.8)
Private Hospital	37 (31.4)	14 (45.2)	31 (41.9)
Other Department	15 (12.7)	5 (16.1)	10 (13.5)
Other Ophthalmology Division	18 (15.3)	3 (9.7)	6 (8.1)
No referral	8 (6.8)	0 (0)	2 (2.7)
Insurance			
National health insurance	108 (91.5)	30 (96.8)	71 (95.9)
Self-pay	10 (8.5)	1 (3.2)	3 (4.1)

In all study periods, benign cases were dominated by nerve tumors, mostly meningioma (**Table 4**). There were also infection cases, such as chronic granulomatous inflammation caused by *Mycobacterium tuberculosis* and a palpebral abscess, which improved after antibiotic therapy. Other cases referred with tumor suspicion turned out to be intraocular haemorrhage, epithelized uveal prolapse, or proptosis cases without radiological abnormality.

Computed tomography (CT) scan was the most frequently performed imaging modality for new patients in our ocular oncology clinic. During the COVID-19 social restriction, CT volumes drop significantly (7 CTs vs 37 CTs in pre-COVID-19 and 21 CTs in post-COVID-19 social restriction). Furthermore, the median waiting time from the initial imaging request until the results came out was prolonged (16 days vs 11 days in pre-COVID-19 and 13 days in post-COVID-19 social restriction). The longest waiting time was 36 days during the COVID-19 social restriction, 56 days in the post-COVID-19 social restriction, and 30 days in the pre-COVID-19 period **(Table 5).**

During the 12 weeks of COVID-19 social restriction, 14 patients underwent surgical procedures in the Ophthalmology Department, compared to 61 patients in the pre-pandemic. The surgery volume only increased to 31 patients in the immediate post-COVID-19 social restriction period. Several patients underwent surgical procedures in other departments, such as neurosurgery, surgical oncology, pathology, and the ENT department. For first-priority cases, the median waiting time from the initial surgery plan to the procedure was almost the same between periods. The median waiting time for second-priority case procedures was shorter, 18 days during the pandemic, compared to 27 days in the pre-pandemic. In contrast, the median waiting time for

P-ISSN: 1978-3744 E-ISSN: 2355-6811

Table 2. Clinical features of patients across all study periods

Characteristic, n (%)	Pre-COVID-19 Pandemic (n = 118)	COVID-19 Pandemic	
		Social restriction (n = 31)	Post-social restriction (n = 74)
Main complaint			
Proptosis	32 (27.1)	9 (29)	26 (35.1)
Palpable mass	46 (39)	9 (29)	25 (33.8)
Ocular surface lesion	19 (16.1)	3 (9.7)	11 (14.9)
Palpebral wound	1 (0.8)	1 (3.2)	3 (4.1)
Blurry eye	13 (11)	6 (19.4)	6 (8.1)
Red eye	2 (1.7)	1 (3.2)	2 (2.7)
Pain	3 (2.5)	1 (3.2)	0 (0)
Double vision	1 (0.8)	1 (3.2)	1 (1.4)
Without eye complaint	1 (0.8)	0 (0)	0 (0)
Onset			
Acute (<2 weeks)	8 (6.8)	4 (12.9)	3 (4.1)
Subacute (2 weeks to 1 month)	13 (11)	3 (9.7)	10 (13.5)
Chronic (>1 month)	97 (82.2)	24 (77.4)	61 (82.4)
Visual Acuity			
Mild or no visual impairment	98 (83.1)	26 (83.9)	66 (89.2)
Moderate visual impairment	6 (5.1)	2 (6.5)	3 (4.1)
Severe visual impairment	0 (0)	1 (3.2)	0 (0)
Blindness	5 (4.2)	2 (6.5)	3 (4.1)
Unspecified	9 (7.6)	0 (0)	2 (2.7)
Tumor Group			
Benign adnexal tumor	33 (28)	8 (25.8)	17 (23)
Malignant adnexal tumor	15 (12.7)	4 (12.9)	8 (10.8)
Orbital tumor	39 (33.1)	8 (25.8)	35 (47.3)
Invasive/metastatic tumor	31 (26.3)	11 (35.5)	14 (18.9)
Laterality			
Unilateral	105 (89)	29 (93.5)	67 (90.5)
Bilateral	13 (11)	2 (6.5)	7 (9.5)
Case priority level			
I	36 (30.5)	12 (38.7)	25 (33.8)
II	29 (24.6)	10 (32.3)	23 (31.1)
III	53 (44.9)	9 (29)	26 (35.1)

third-priority case procedures was longer during the COVID-19 social restriction (41 days vs 28.5 days in pre-COVID-19 and 16.5 days in post-COVID-19 social restriction) **(Table 6).**

DISCUSSION

The Large-scale social restriction policies during the COVID-19 social restriction reduced people mobilization with no exception, including patients seeking healthcare services. As the government appointed several general hospitals as COVID-19 referral hospitals [5,16], a significant drop in new patients referred to ocular oncology services in tertiary eye care centers was expected. As shown in our study results, reduced healthcare access is predicted in a particular group of patients.

Children and elderly groups are deemed more vulnerable to the severe manifestation and complications of COVID-19. Both groups were more encouraged to stay at home during the pandemic peak. Thus, a decrease in the proportion of patients under 18 years and above 60 years who visit our ocular oncology clinic

Table 3. Histopathological distribution and tumor size of malignant cases according to the 8th edition of AJCC staging system

Characteristic, n (%)	Pre-COVID-19 Pandemic (n = 44)	COVID-19 Pandemic	
		Social restriction (n = 12)	Post-social restriction (n = 33)
Histopathology results, n (%)			
Basal cell carcinoma	5 (11.4)	1 (8.3)	1 (3)
Sebaceous cell carcinoma	5 (11.4)	1 (8.3)	1 (3)
Squamous cell carcinoma	6 (13.6)	3 (25)	2 (6.1)
Ocular surface squamous neoplasia	2 (4.5)	(16.7)	2 (6.1)
Malignant melanoma	3 (6.8)	0 (0)	4 (12.1)
Malignant lymphoid tumor	11 (25)	1 (8.3)	8 (24.2)
Malignant mesenchymal tumor	3 (6.8)	0 (0)	2 (6.1)
Retinoblastoma	1 (2.3)	0 (0)	0 (0)
Cystic adenoid carcinoma	3 (6.8)	0 (0)	1 (3)
Ameloblastic carcinoma	0 (0)	1 (8.3)	0 (0)
Metastatic carcinoma	0 (0)	1 (8.3)	0 (0)
Unconfirmed	5 (11.4)	2 (16.7)	12 (36.4)
Tumor size, n (%)			
T1	4 (8.2)	0 (0)	4 (11.4)
T2	12 (24.5)	4 (28.6)	10 (28.6)
T3	9 (18.4)	1 (7.1)	9 (25.7)
T4	24 (49)	9 (64.3)	12 (34.3)

Table 4. Histopathological distribution of benign cases

Characteristic, n (%)	Pre-COVID-19 Pandemic (n = 74)	COVID-19 Pandemic	
		Social restriction (n=19)	Post-social restriction (n=41)
Dermoid/dermolipoma	5 (6.8)	0 (0)	2 (4.9)
Melanocytic nevus	2 (2.7)	0 (0)	3 (7.3)
Seborrheic keratosis	0 (0)	0 (0)	1 (2.4)
Epithelial cyst	7 (9.5)	1 (5.3)	1 (2.4)
Hemangioma	0 (0)	0 (0)	1 (2.4)
Squamous papilloma	2 (2.7)	0 (0)	1 (2.4)
Pseudotumor	2 (2.7)	0 (0)	0 (0)
Nerve tumor	10 (13.5)	4 (21.1)	5 (12.2)
Benign lymphoid tumor	2 (2.7)	0 (0)	0 (0)
Vascular malformations	1 (1.4)	3 (15.8)	0 (0)
Pleiomorphic adenoma	2 (2.7)	0 (0)	0 (0)
Fibro-osseous tumor	1 (1.4)	0 (0)	1 (2.4)
Calcifying odontogenic tumor	1 (1.4)	0 (0)	0 (0)
Hordeolum/chalazion	4 (5.4)	2 (10.5)	4 (9.8)
Unconfirmed benign tumor	30 (40.5)	7 (36.8)	18 (43.9)
Infectious disease	2 (2.7)	1 (5.3)	1 (2.4)
Others	3 (4.1)	1 (5.3)	3 (7.3)

Table 5. Waiting time for radiology imaging

Characteristic, n (%)	Pre-COVID-19 Pandemic (n = 38)	COVID-19 Pandemic	
		Social restriction (n = 11)	Post-social restriction (n = 21)
CT Scan, n (%)	37 (97.3)	7 (63.6)	21 (100)
Waiting time (days), median (min-max)	11 (4–30)	16 (4–36)	13 (6–6)
MRI, n (%)	1 (2.7)	4 (36.4)	0 (0)
Waiting time (days), median (min-max)	24	56 (34–64)	-

CT Scan, computed tomography scan; MRI, magnetic resonance imaging.

Table 6. Waiting time for the procedure in each case priority

Characteristic, n (%)	Pre-COVID-19 Pandemic (n = 61)	COVID-19 Pandemic	
		Social restriction (n=14)	Post-social restriction (n=31)
First-priority cases, n (%)	27 (44.2)	8 (57.1)	14 (45.1)
Waiting time (days), median (min-max)	16 (4–65)	16.5 (4–40)	17.5 (4–32)
Second-priority cases, n (%)	10 (16.4)	3 (21.4)	7 (22.6)
Waiting time (days), median (min-max)	27 (13–48)	18 (15–35)	18 (13–40)
Third-priority cases, n (%)	24 (39.3)	3 (21.4)	10 (32.3)
Waiting time (days), median (min-max)	28.5 (11–63)	41 (18–60)	16.5 (7–67)

was not surprising. A global survey by Graetz et al. [12] also reported a decreasing number of new pediatric cancer patients in 42% of institutions across 79 countries. Gazzini et al. [17] reported a small number of elderly patients diagnosed with head and neck cancer during the pandemic in Italy. As shown in our study, a rebound of children and elderly patients, occurred after social restriction relaxation.

Female patients also experienced reduced healthcare access, as reflected in the number of female patients who had not fully recovered after the COVID-19 social restriction was relaxed. Pachecho et al. [14] reported a declining number of women diagnosed with cancer during the pandemic in Chile. Women's access to healthcare services was affected by societal social norms, making them more burdened in caring for their families during the pandemic [18]. Married women had less time and opportunity to access health services than men.

On the contrary, a drop in the number of patients with high education levels during the COVID-19 social restriction, which recovered after the social restriction, seemed unrelated to healthcare accessibility. Patients with higher education had better information access and higher compliance with government policies. Thus, they might have decided to postpone their visit during the social restriction [19]. In addition, a reduced proportion of patients from outside Greater Jakarta was observed, as also reported by Mayasari and Nusanti [20] in a descriptive study at the Neuro-ophthalmology clinic of Cipto Mangunkusumo Hospital.

In all study periods, most patients had a chief complaint of proptosis or palpable mass with chronic onset. The major chief complaint was conforming with the dominating tumor group, namely invasive or metastatic tumors during the COVID-19 social restriction and orbital tumors in the other two periods. The proportion of patients with acute onset slightly raised during the COVID-19 social restriction, while the chronic patient might have postponed their hospital visits. Patients with visual impairments were reported to have more concerns about being infected with the virus and having a more challenging time keeping up with efforts to prevent the transmission of COVID-19, as well as being at risk of obtaining incomplete information because of their visual impairment [21]

During the COVID-19 social restriction, the proportion of first-priority cases increased while third-priority cases decreased. These results satisfied the aim of case prioritization itself. The number of suspected malignant and benign cases was 12 and 19, respectively. A higher proportion of suspected malignant tumors with more advanced T-stage was presented during the COVID-19 social restriction. These results contradicted the COVID-19 impact study on eye cancer care in the United Kingdom (UK), which delineated a spike in patients with advanced disease stages after the restriction policy was discontinued [22] Nevertheless, subjects were limited to uveal melanoma cases, an intraocular tumor. In our study, the incidence of intraocular tumors was below 5%. An increasing proportion of advanced-stage patients

was also reported in several studies regarding the impact of COVID-19 on cancer services [22,23].

The shift in focus of national health services during the early period of the COVID-19 pandemic was evident from the reduced number of new patients visiting our ocular oncology clinic. A considerable reduction in confirmed malignant cases followed the declining number of new patients. For example, only one orbital lymphoma was confirmed during the COVID-19 social restriction, while lymphoma was the most distributed malignant case in another two periods. In Italy, cases of malignant tumors in 2020 decreased by 39% compared to the previous year [24] While in the UK, Wang et al. [25] stated that cases of uveal melanoma decreased by 43.2% during the COVID-19 spike. At the same time, benign cases were dominated by meningiomas, in which all cases during the COVID-19 social restriction period were categorized as blind in the affected eye.

The waiting time for radiology imaging was prolonged during the pandemic. Even one patient decided to do an MRI examination in another hospital. Prolonged radiology waiting time was affected by the decreasing capacity of radiology unit services in the early period of the pandemic. Radiology resources were allocated partially to the COVID-19 special zone. The declining capacity of cancer imaging during the COVID-19 pandemic was also described by Zattra et al. [26] at four hospitals in Massachusetts.

The number of patients who underwent surgical procedures declined to 14 during the COVID-19 social restriction, compared to 61 patients in the corresponding period a year before. In pre-pandemic, most procedures were performed under general anesthesia. During the pandemic, the proportion of general anesthesia was reduced and shifted to local anesthesia if possible. General anesthesia was restricted due to the high risk of aerosol transmission [27]. If procedures with aerosol risk must be performed, operators were advised to use level-3 personal protective equipment (PPE) [28]. Still, the number of procedures did not recover immediately in the post-COVID-19 social restriction period. A quarter of patients who had planned procedures were lost to follow-up, which might be associated with fear of getting COVID-19 through hospitals and other patient-related problems, such as financial problems or lack of family support. Patients with disabilities and patients in red zones had a greater concern about being infected with COVID-19 [28].

The median waiting time for the procedure in each case priority reflected success in hospital policy implementation, which scheduled procedures based on their case priority. The median waiting time for the procedure was shortest for first-priority cases and longest for third-priority patients. Despite that, care for high-priority cases would be more effective if the number of third-priority cases might be suppressed even more. Developing a teleophthalmology system in eye care is necessary to reduce the proportion of third-priority cases. This teleophthalmology system is expected to be a secondary triage before the patient makes a clinical visit [7]. As described in the IOA manual, third-priority cases, such as benign tumors that are not visually threatening, can be treated by teleconsultation, prescribed via telephone/video/system, and then scheduled to attend clinic later [9].

CONCLUSIONS

As the healthcare focus switched to COVID-19 patients, referral to ocular oncology services was severely disrupted, particularly in certain groups of patients. The decreased number might be associated with fear of getting COVID-19 through hospitals and other patient-related problems, such as financial problems or lack of family support. Hospital visits were dominated by first-priority cases during the social restriction period. This reflects the success of hospital and government social restriction policies compliance. However, strategies are needed to ensure that highly prioritized cases may access the services. Teleophthalmology is one of the strategies that has been used to reduce the number of third-priority cases and is expected to be a secondary triage before the patient makes a clinical visit. Since some other collateral damage to the ocular oncology services might still be present as a result of the COVID-19 pandemic, further research is required.

DECLARATIONS

Competing of Interest

The authors declare no competing interest in this study.

Ethics Approval

Ethical clearance was issued by the Faculty of Medicine, Universitas Indonesia, with certificate number KET-102/UN2.F1/ETIK/PPM.00.02/2022

REFERENCES

1. World Health Organization. Timeline of WHO's response to COVID-19 [Internet]. 2019 [cited 2022 Oct 21st]. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline.
2. Yang Y, Xiao Z, Ye K, et al. SARS-CoV-2: characteristics and current advances in research. Virol J. 2020;17(1): 117.
3. Kementerian Kesehatan Republik Indonesia. Dokumen Resmi dan Protokol Penanganan COVID-19 [Internet]. 2020 [cited 2022 Oct 21]. Available from: https://www.kemkes.go.id/article/view/20031700001/Dokumen-Resmi-dan-Protokol-Penanganan-COVID-19.html

4. Djalante R, Lassa J, Setiamarga D, et al. Review and analysis of current responses to covid-19 in Indonesia: a period of January to March 2020. Prog Disaster Sci. 2020;6:100091.
5. La Distia Nora R, Putera I, Khalisha DF, et al. Are eyes the windows to COVID-19? Systematic review and meta-analysis. BMJ Open Ophthalmol. 2020;5: e000563.
6. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020;395:497–506.
7. Manjandavida F, Honavar S, Kim U, et al. Ocular oncology practice guidelines during COVID-19 pandemic-an expert consensus. Indian J Ophthalmol. 2020;68(7):1281–91.
8. Sun CB, Wang YY, Liu GH, Liu Z. Role of the eye in transmitting human coronavirus: what we know and what we do not know. Front Public Heal. 2020; 8:155.
9. Perhimpunan Dokter Spesialis Mata Indonesia (PERDAMI). Panduan pelayanan mata era pandemik covid-19 & adaptasi kebiasaan baru_rekomendasi Perhimpunan Dokter Spesialis Mata Indonesia [Internet]. 2021 [cited 2022 Oct 21]. Available from: https://perdami.or.id/panduan-pelayanan-mata-era-pandemik-covid-19-adaptasi- kebiasaan-baru_ rekomendasi-perdami-2/.
10. Mazzini C, Pieretti G, Vicini G, et al. Ocular oncology service during the COVID-19 outbreak in Florence (Italy): practical considerations for the management of patients. Eur J Ophthalmol. 2021;31(2):NP4–7.
11. Skalet AH, Allen RC, Shields CL, et al. Considerations for the management and triage of ocular oncology cases during the covid-19 pandemic. Ocul Oncol Pathol. 2020;6(3):1–4.
12. Graetz D, Agulnik A, Ranadive R, et al. Global effect of the covid-19 pandemic on paediatric cancer care: a cross-sectional study. Lancet Child Adolesc Heal. 2021;5(5):332–40.
13. Gazzini L, Fazio E, Dallari V, et al. Impact of the covid-19 pandemic on head and neck cancer diagnosis: data from a single referral center, south Tyrol, northern Italy. Eur Arch Oto-Rhino-Laryngology. 2022;279(6):3159–66.
14. Pacheco J, Crispi F, Alfaro T, et al. Gender disparities in access to care for time-sensitive conditions during COVID-19 pandemic in chile. BMC Public Health. 2021; 21:1802.
15. Wong RLM, Ting DSW, Wan KH, et al. COVID-19: Ocular Manifestations and the APAO Prevention Guidelines for Ophthalmic Practices. Asia Pac J Ophthalmol (Phila). 2020;9(4):281-4.
16. Power K. The COVID-19 pandemic has increased the care burden of women and families. Sustainability: science, practice, & policy. 2020;16:67–73.
17. Ksinan Jiskrova G, Bobák M, Pikhart H, Ksinan AJ. Job loss and lower healthcare utilization due to COVID-19 among older adults across 27 European countries. J Epidemiol Community Heal. 2021;75(11):1078–83.
18. Rizaty IA. Perbandingan karakteristik pasien yang ditetapkan sebagai PDP dan bukan COVID-19 pascaoperasi di RSUPN dr. Cipto Mangunkusumo [Thesis]. Jakarta, Universitas Indonesia; 2020.
19. Mahendradhata Y, Andayani NLPE, Hasri ET, et al. The capacity of the Indonesian healthcare system to respond to COVID-19. Front Public Heal. 2021;9:887.
20. Shalaby WS, Odayappan A, Venkatesh R, et al. The impact of COVID-19 on individuals across the spectrum of visual impairment. Am J Ophthalmol. 2021;227:53–65.
21. Wang H, Elsheikh M, Gilmour K, et al. Impact of COVID-19 pandemic on eye cancer care in United Kingdom. Br J Cancer. 2021;124(8):1357–60.
22. Davis CH, Ho J, Greco SH, et al. COVID-19 is affecting the presentation and treatment of melanoma patients in the Northeastern United States. Ann Surg Oncol. 2022;29(3):1629–35.
23. De Vincentiis L, Carr RA, Mariani MP, Ferrara G. Cancer diagnostic rates during the 2020 'lockdown,' due to COVID-19 pandemic, compared with the 2018–2019: an audit study from cellular pathology. J Clin Pathol. 2021;74(3):187–9.
24. Zattra O, Fraga A, Lu N, et al. Trends in cancer imaging by indication, care setting, and hospital type during the COVID-19 pandemic and recovery at four hospitals in Massachusetts. Cancer Med. 2021;10(18):6327–35.
25. Elsabeeny WY, Abd El Dayem OY, Rabea A, et al. Insights of COVID-19 pandemic impact on anesthetic management for patients undergoing cancer surgery in the National Cancer Institute, Egypt. Ain-Shams J Anesthesiol. 2020;12(1):59.
26. Riera R, Bagattini AM, Pacheco RL, et al. Delays and Disruptions in Cancer Health Care Due to COVID-19 Pandemic: Systematic Review. J Glob Oncol. 2021;(7):311–23.
27. Holm ME, Sainio P, Parikka S, Koskinen S. The effects of the COVID-19 pandemic on the psychosocial well-being of people with disabilities. Disabil Health J. 2022;15(2):101224
28. de Joode K, Dumoulin DW, Engelen V, et al. Impact of the coronavirus disease 2019 pandemic on cancer treatment: the patient's perspective. Eur J Cancer. 2020;136:132–9.